

ABSTRACT OF THE DISCLOSURE

A rectifier device, based on a novel operation principle completely different from that of conventional molecular electronic devices, is made by coupling two or more molecules or molecule arrays (11) at certain joints. By making use of the phenomenon that transfer of an excited state or exciton from one molecule or molecule array to another molecule or molecule array coupled thereto progresses asymmetrically due to spatial asymmetry at the joint, a rectifying function related to the transfer of the excited state of exciton is obtained. Additionally, by controlling the rectification property in addition to the rectification function, an ion sensor device or a switching device is made. A resistor device may be inserted in the rectifier device.